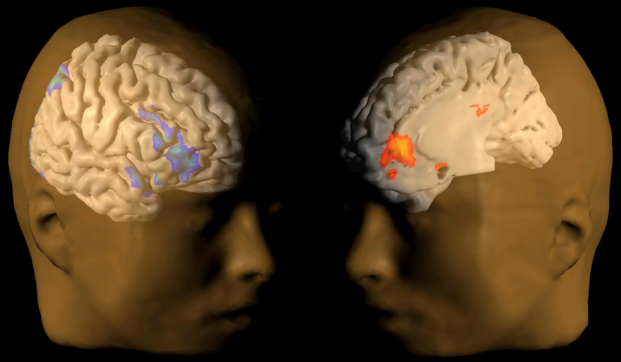

Behavioral Finance

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November 17, 2008

Mainstream economics

Standard (or “classical”) assumptions:

- **People *know* what’s in their best interest.**
- **And they *act* on that knowledge.**

Behavioral Economics
also known as
Psychology and Economics

Better assumptions:

- **People sometimes get confused.**

  "International equities make my portfolio more risky."

- **And even when we do understand what's best, we often don't follow through.**

  "I'll diversify my portfolio next month."

Psychology + Economics

- **Nobel Prize (2002) to Daniel Kahneman**

Behavioral Finance

Use psychology *and* economics to understand finance:

Asset pricing:

- Price Anomalies
- Value Anomaly
- IPO underperformance
- Equity premium
- PEA drift
- Momentum
- Bubbles

Corporate finance:

- IPO timing
- Winner's curse
- Cash-flow sensitivity
- Overconfidence
- Superstar CEO's

Household finance:

- ***Present Bias***
- ***Passivity***
- ***Procrastination***
- Financial illiteracy
- Emotional choice
- Return chasing
- Loss aversion
- Narrow Framing
- Home bias
- Overconfidence
- Wishful thinking

Thought Experiment

Would you like to have

A) 15 minute Swedish massage now

or

B) 20 minute Swedish massage in an hour

Would you like to have

C) 15 minute Swedish massage in a week

or

D) 20 minute Swedish massage in a week and an hour

Choosing fruit vs. chocolate
Read and van Leeuwen (1998)

Choosing Today → Eating Next Week → *Time*

If you were deciding today, would you choose fruit or chocolate for next week?

Patient choices for the future:

Choosing Today → Eating Next Week → *Time*

Today, subjects typically choose fruit for next week.

74% choose fruit

Impatient choices for today:

Choosing and Eating Simultaneously

Time

If you were deciding today, would you choose fruit or chocolate for today?

Time Inconsistent Preferences:

Choosing and Eating Simultaneously

70% choose chocolate

The desire for instant gratification
Read, Loewenstein & Kalyanaraman (1999)

Choose among 24 movie videos

- **Some are "low brow": *Four Weddings and a Funeral***
- **Some are "high brow": *Schindler's List***

- **Picking for tonight: 66% of subjects choose low brow.**
- **Picking for next Monday: 37% choose low brow.**
- **Picking for second Monday: 29% choose low brow.**

Tonight I want to have fun…
next week I want things that are good for me.

Quantitative Model

- Quasi-hyperbolic discounting (Laibson, 1997)
- Place full weight on present rewards and costs
- Place half weight on all future rewards and costs

Procrastination
Akerlof 1991

- Suppose that smoking has an immediate benefit of 6 and delayed health cost of 8.
- Will you smoke today?

- Smoke Today: $6 + \frac{1}{2}[-8] = 2$
- Smoke Tomorrow: $0 + \frac{1}{2}[6 - 8] = -1$

- Happy to make plans today to quit tomorrow.
- But likely to fail to follow through.
- Same pattern for smoking, diet, exercise, savings, etc….

Joining a Gym
Della Vigna and Malmendier (2004)

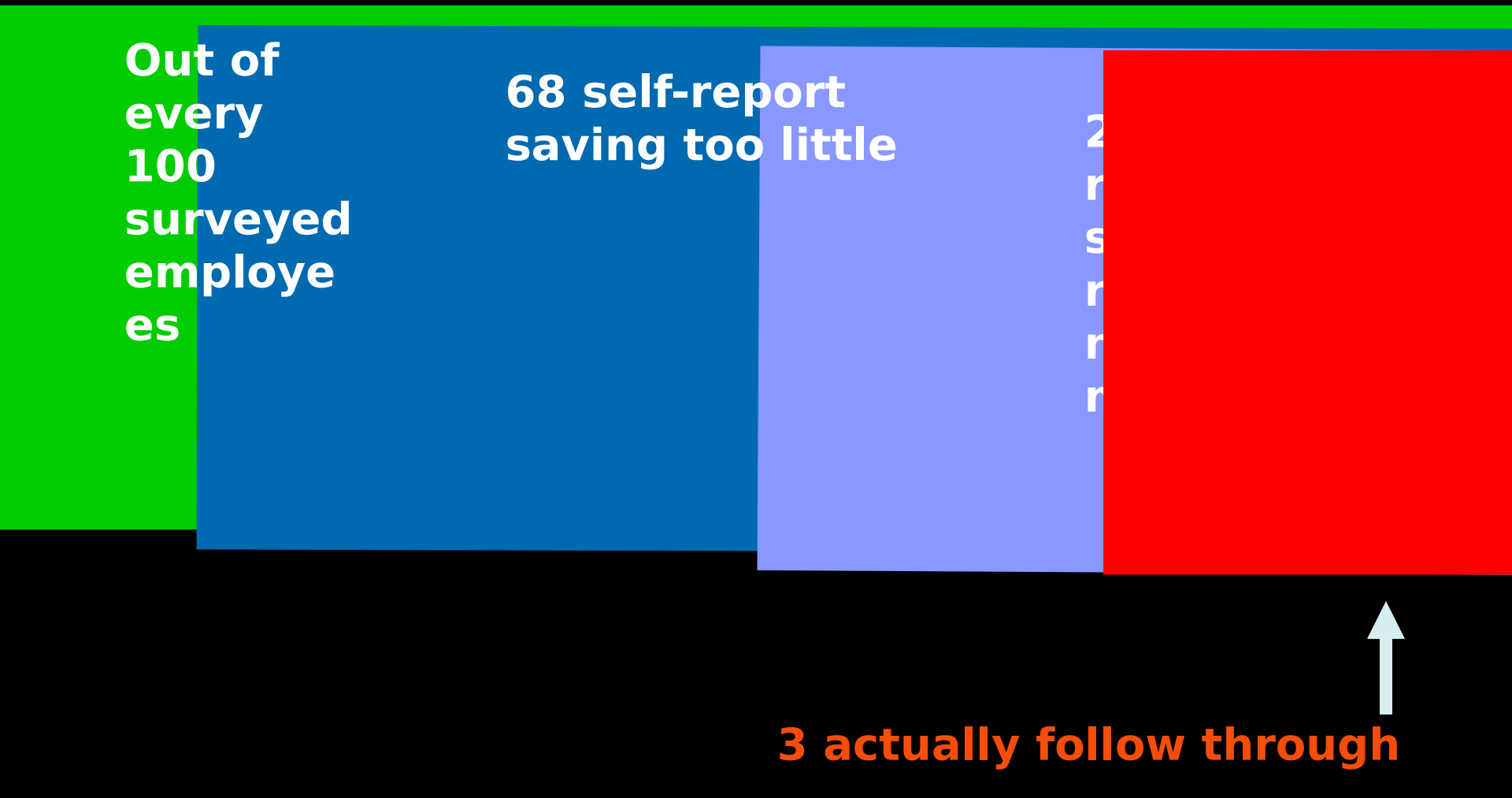
- Average cost of gym membership: $75 per month
- Average number of visits: 4
- Average cost per visit: $19
- Cost of “pay per visit”: $10

Procrastination in retirement savings

Choi, Laibson, Madrian, Metrick (2002)

- **Survey**
  - Mailed to a random sample of employees
  - Matched to administrative data on actual savings behavior

Typical breakdown among 100 employees



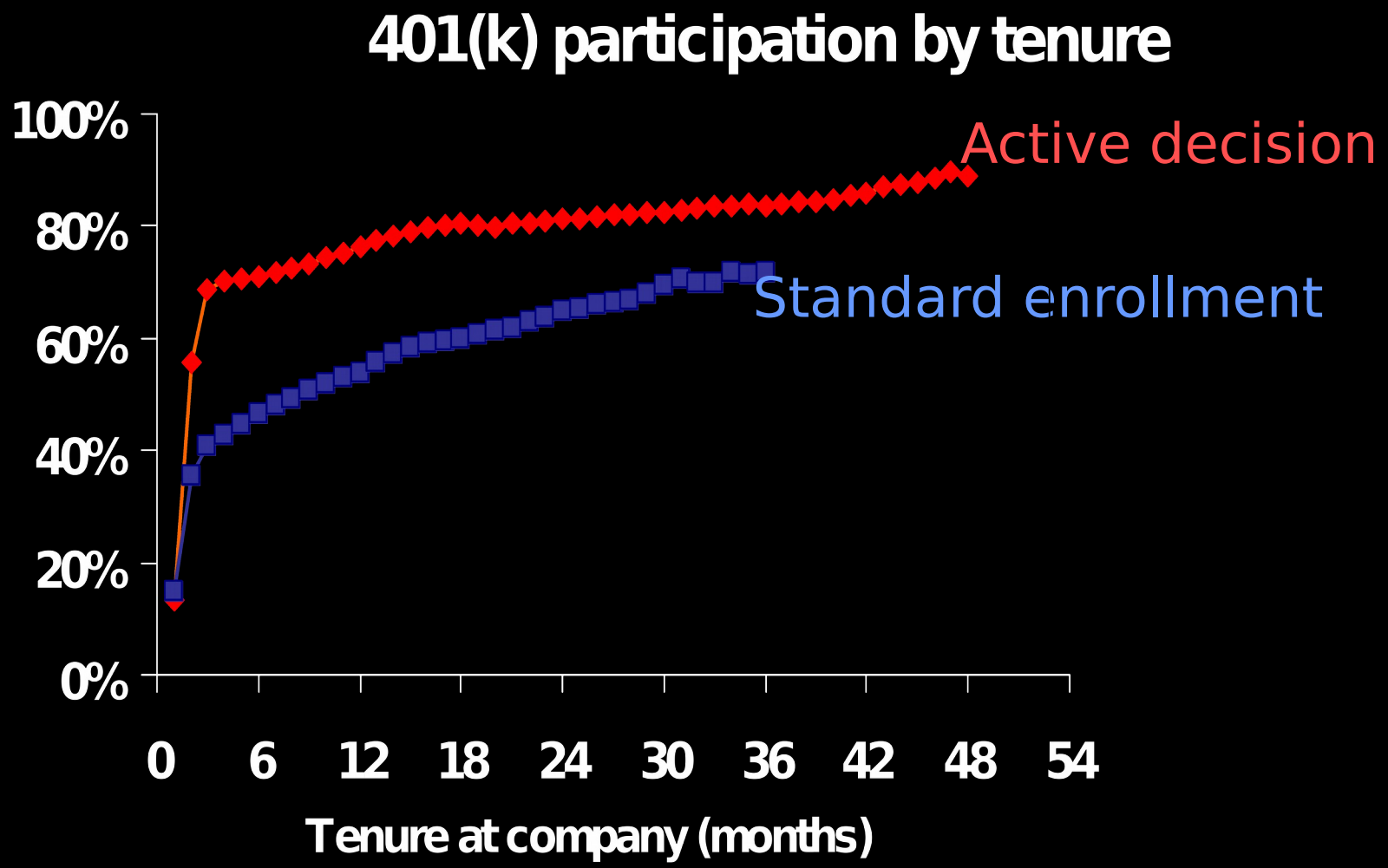
The power of deadlines: Active decisions

Choi, Laibson, Madrian, Metrick (2004)

Active decision mechanisms require employees to make an active choice about 401(k) participation.

- Welcome to the company
- You are *required* to submit this form within 30 days of hire, *regardless* of your 401(k) participation choice
- If you don't want to participate, indicate that decision
- If you want to participate, indicate your contribution rate and asset allocation
- Being passive is *not* an option

401(k) participation increases under active decisions

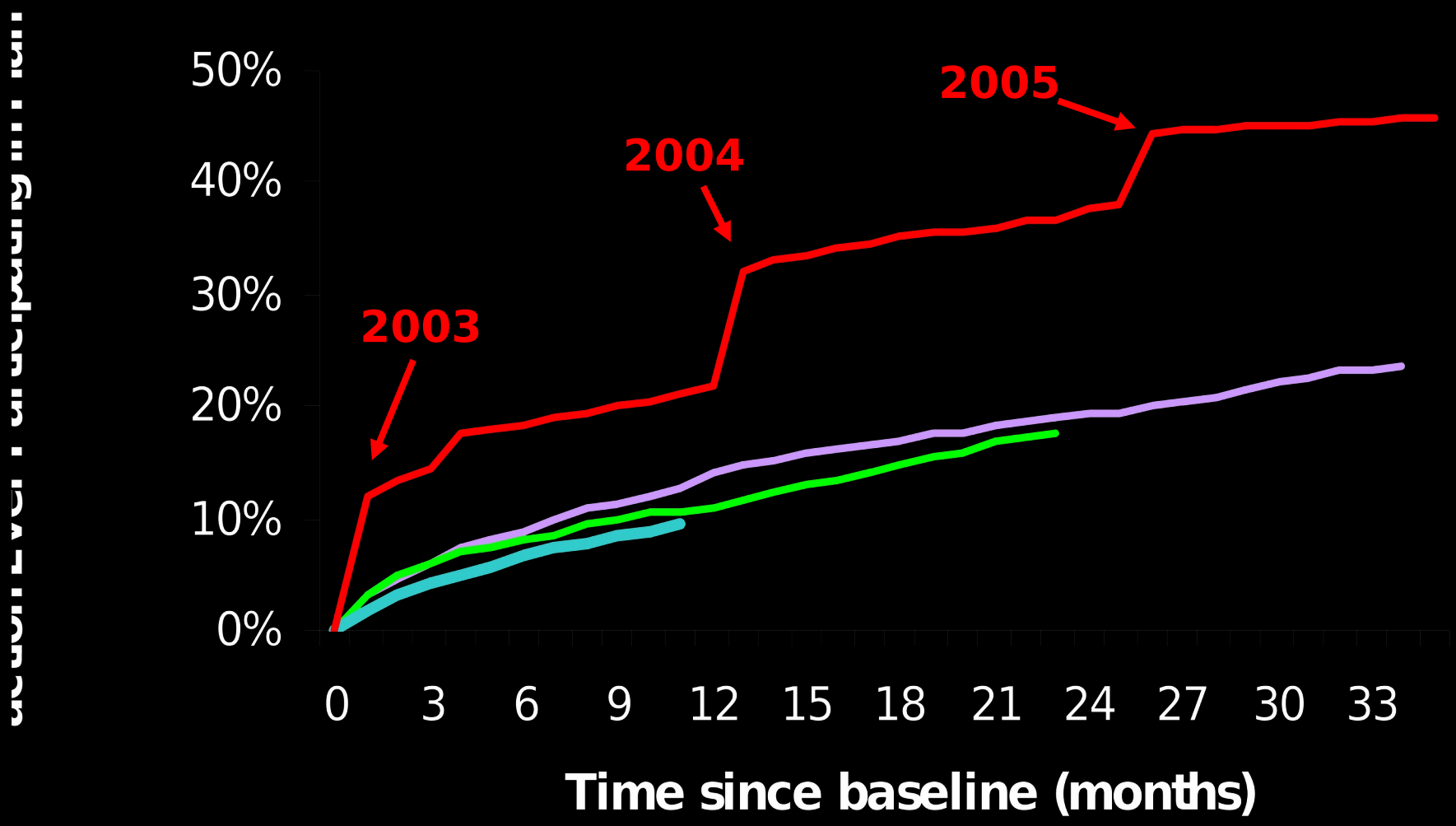


Active decisions: conclusions

- **Active decision raises 401(k) participation.**
- **Active decision raises average savings rate by 50 percent.**
- **Active decision doesn’t induce choice clustering.**
- **Under active decision, employees choose savings rates that they otherwise would have taken three years to achieve. (Average level *as well as* the entire multivariate covariance structure.)**
- **What could you do? Ask service members to make an active choice.**

Simplified enrollment raises participation

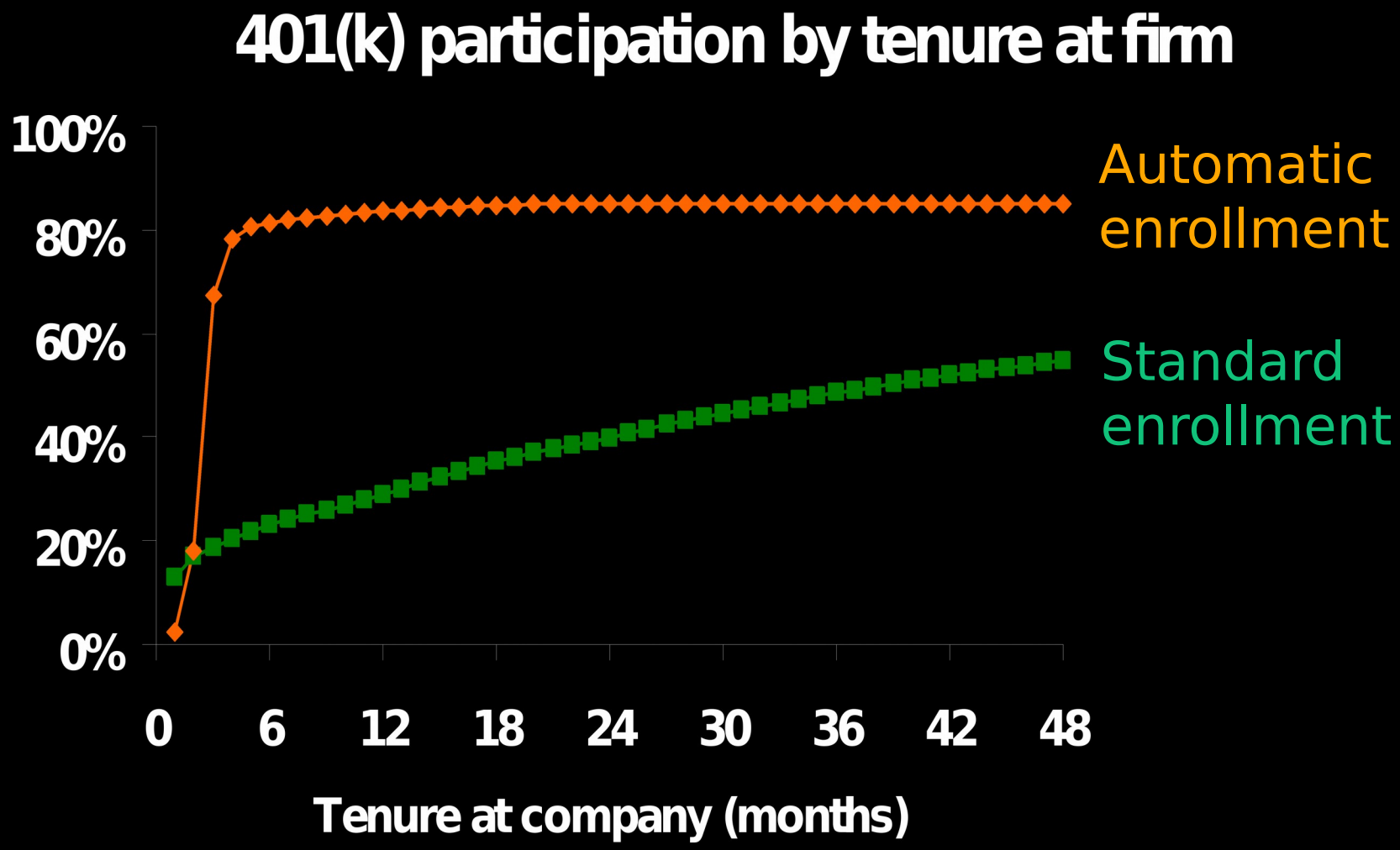
Beshears, Choi, Laibson, Madrian (2006)



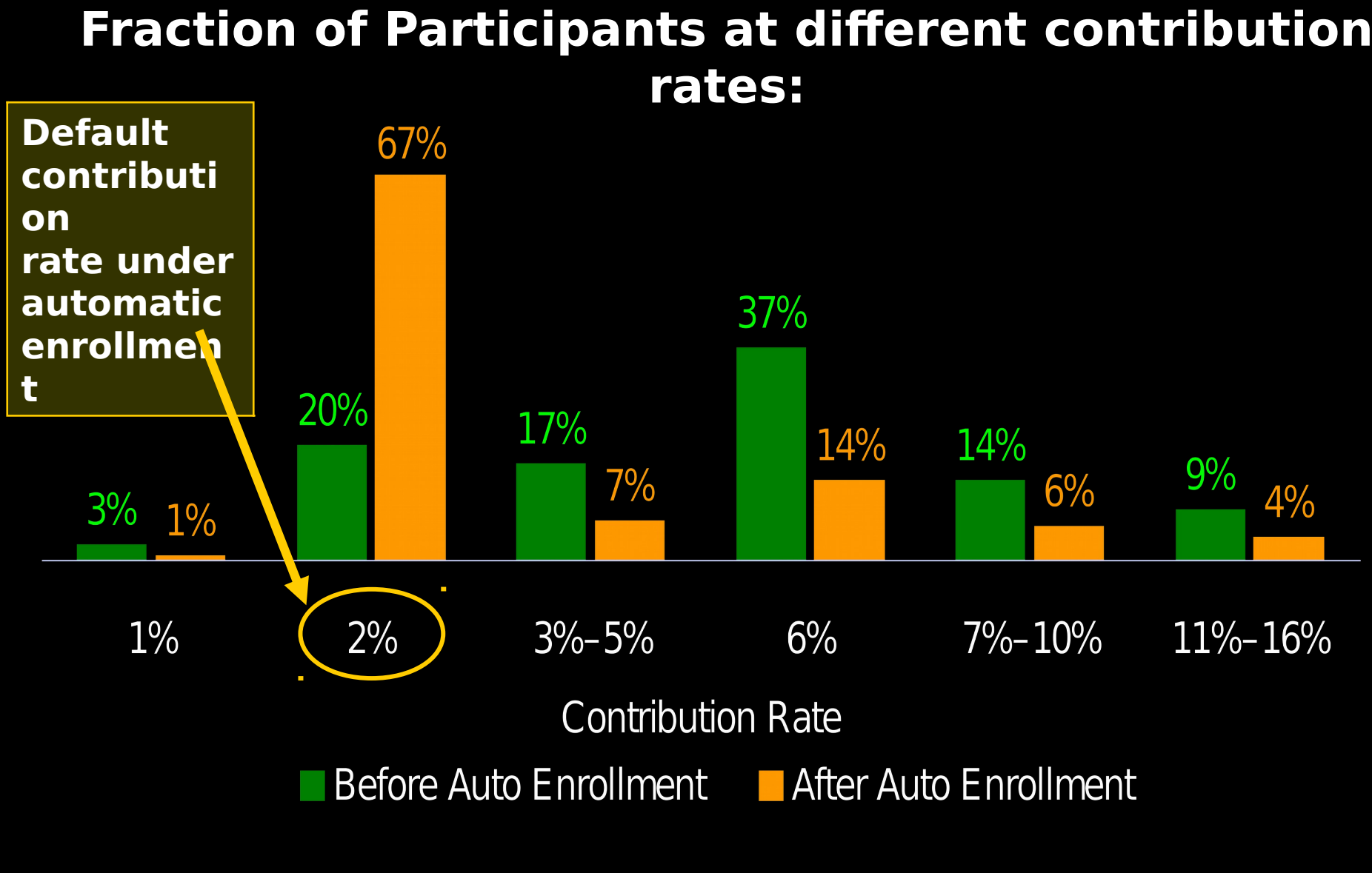
Automatic enrollment
The future of the TSP?

- **Welcome to the uniformed services**
- **If you don’t do anything**
  - –You are automatically enrolled in the TSP
  - –You automatically contribute 3% of your pay
  - –Your contributions go into the G fund
- **Call this phone number to opt out of enrollment or change your investment allocations**

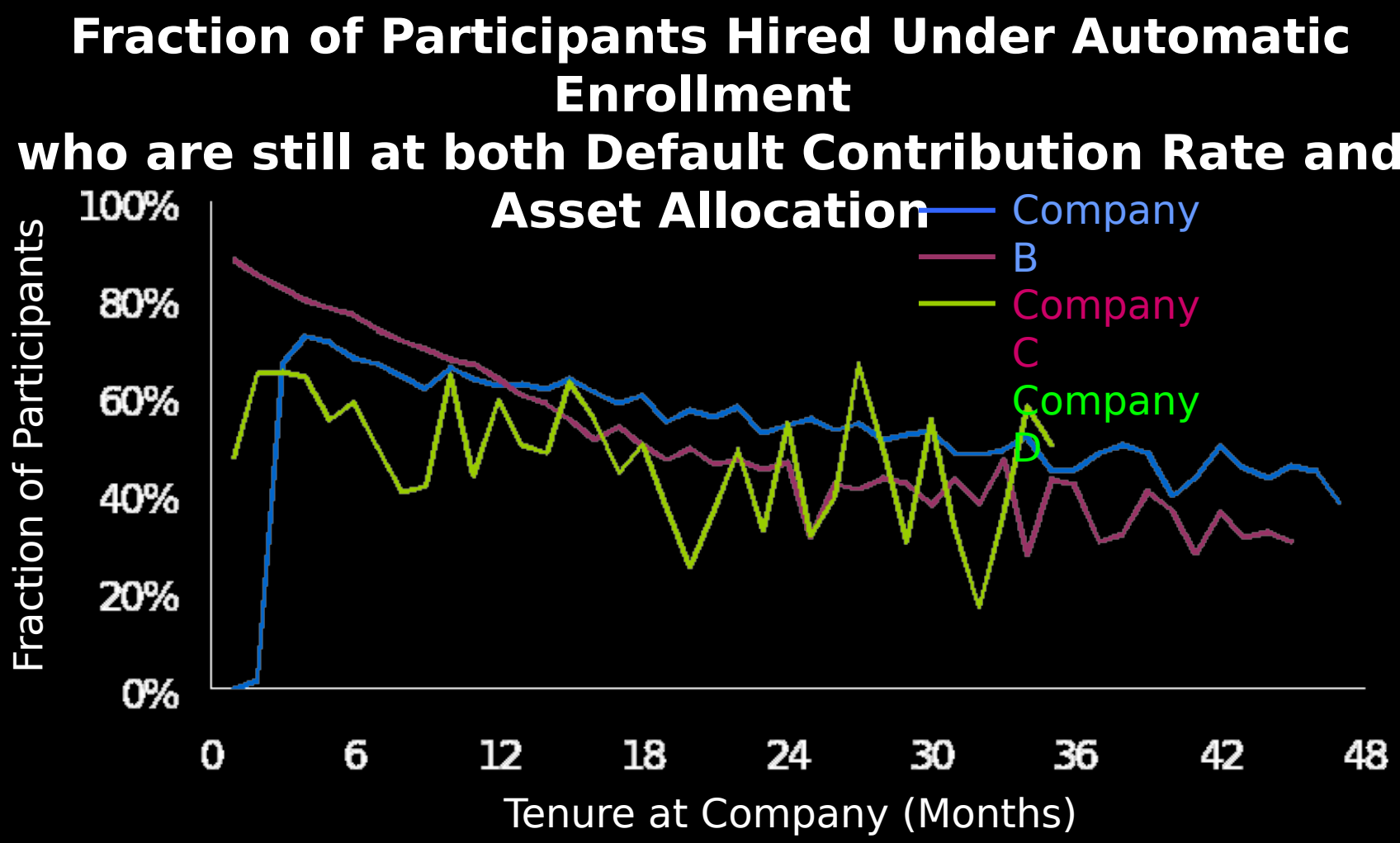
Madrian and Shea (2001)
Choi, Laibson, Madrian, Metrick (2004)



Employees enrolled under automatic enrollment cluster at default contribution rate.



Participants stay at the automatic enrollment defaults for a long time.



Automatic enrollment

- **Participants hired under automatic enrollment tend to stay at the automatic enrollment defaults (about 75%)**
  - Default saving rates
  - Default asset allocation
- **Automatic enrollment results suggest that employees are passive**

Do workers like automatic enrollment?

- In firms with standard 401(k) plans (no auto-enrollment), 2/3 of workers say that they should save more
- When workers need to make active decisions, 70% join the 401(k) plan in the first three months of work
- Opt-out rates under automatic enrollment are typically only 15% (opt-out rates rarely exceed 20%)
- Under automatic enrollment (and even asset mapping) HR offices report “no complaints” in 401(k) plans
- 97% of employees in auto-enrollment firms approve of auto-enrollment.
- Even among workers who opt out, approval is 79%.

Looking ahead

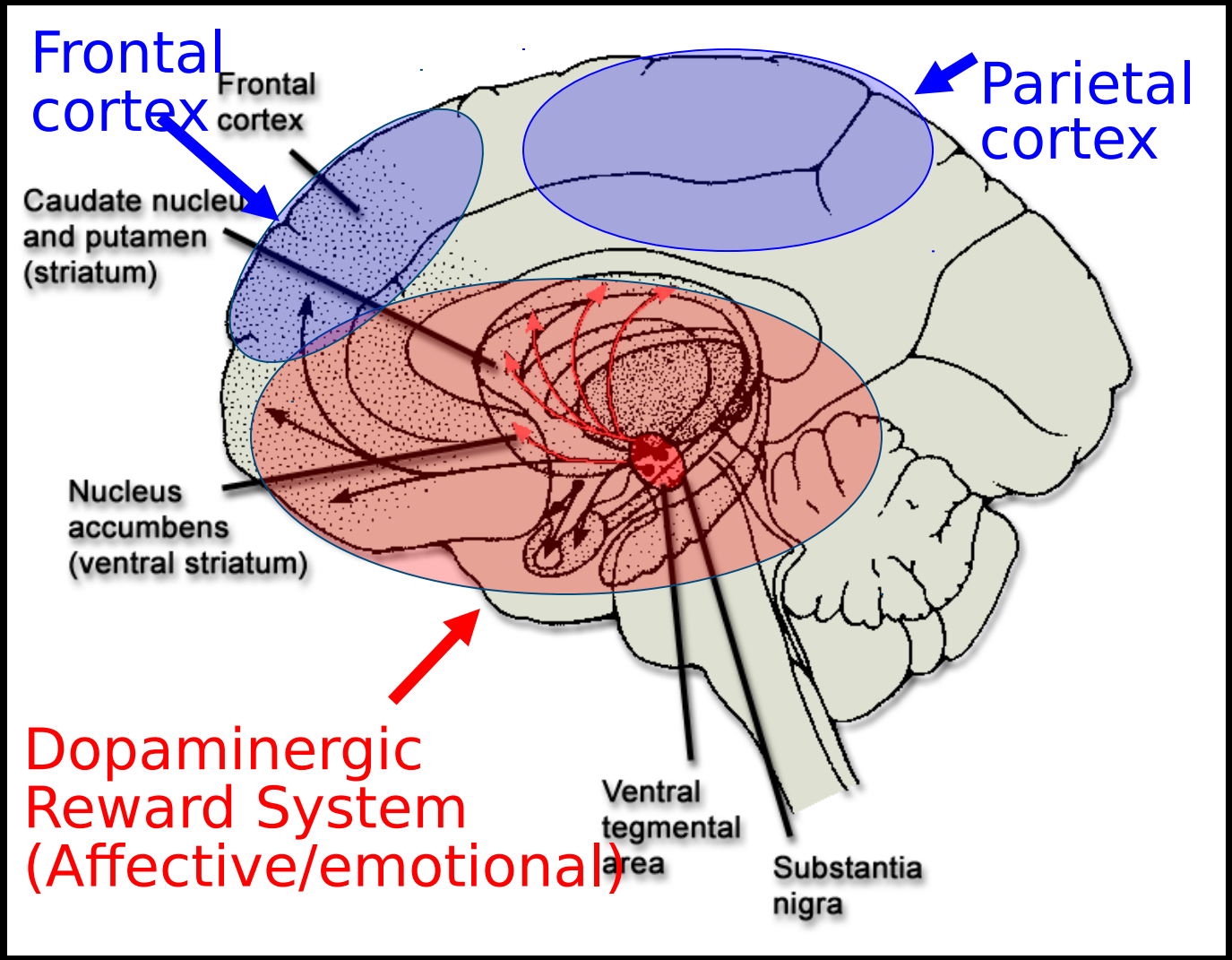
- **If the TSP does adopt automatic enrollment with a 3% saving rate and automatic asset allocation to the G fund, I recommend that you:**
  - Nudge service members to choose a higher savings rate (e.g., 10% of their income)
  - Nudge service members to choose a more aggressive asset allocation (e.g., Lifecycle fund)

Emotional Decision-making
Shiv and Fedorikhin (1999)

- **Cognitive burden/load is manipulated by having subjects keep a 2-digit or 7-digit number in mind as they walk from one room to another**
- **On the way, subjects are given a choice between a piece of cake or a fruit-salad**

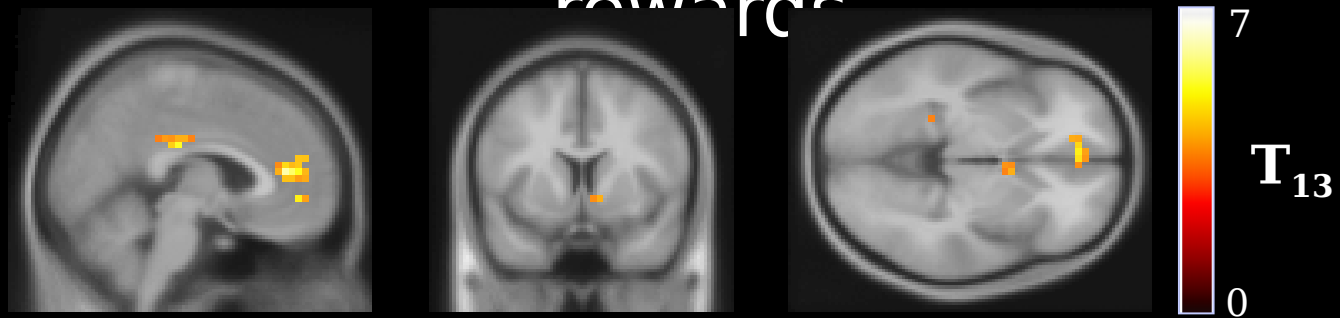
Processing burden	**% choosing cake**
Low **(remember only 2 digits)**	**41%**
High **(remember 7 digits)**	**63%**

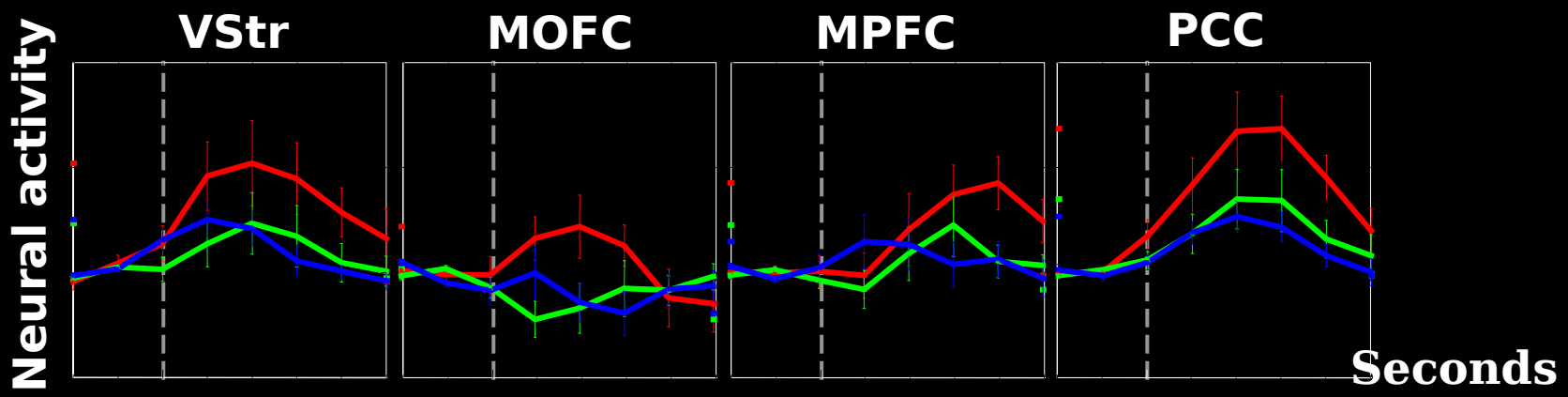
Emotional system (dopaminergic targets) vs. Fronto-Parietal System



McClure, Laibson, Loewenstein, and Cohen
Science (2004)

Emotional system responds only to immediate rewards





Earliest reward available today

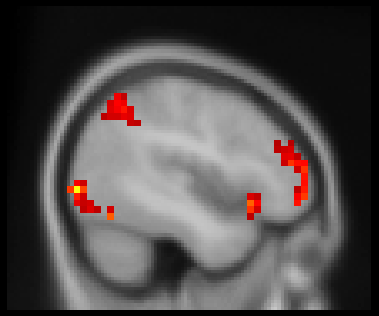
Earliest reward available in 2 weeks

Earliest reward available in 1 month

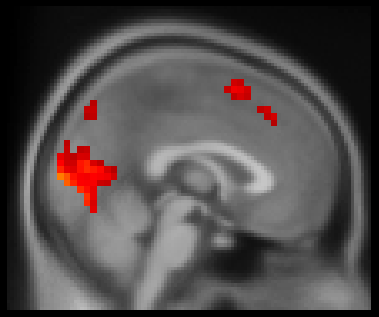
0.4%

2s

alytic brain responds equally to all rewa

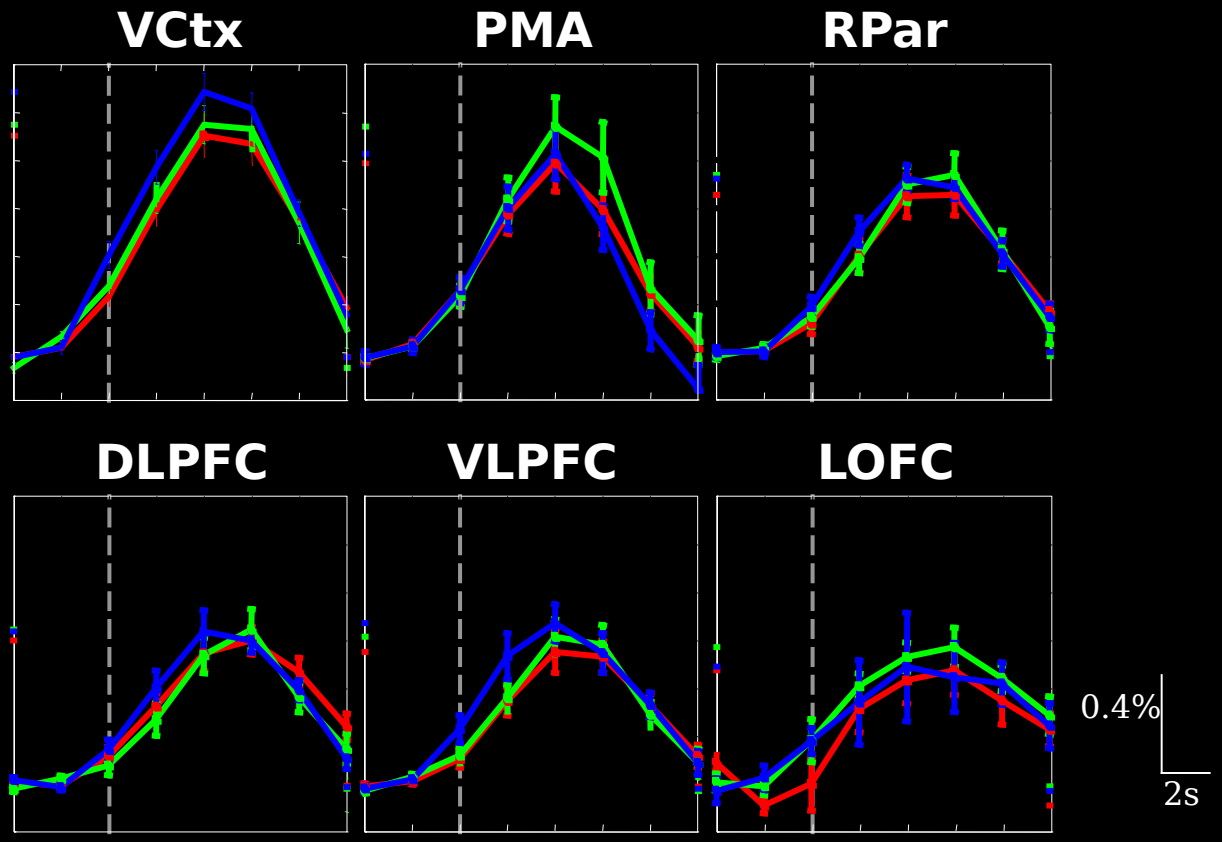


x = 44mm



x = 0mm

3



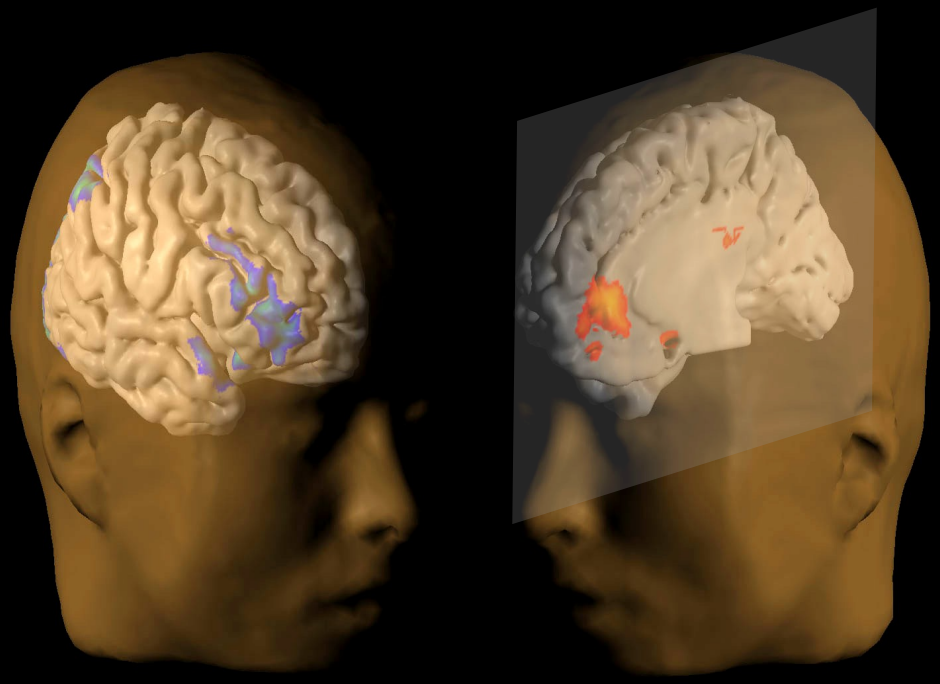
d = Earliest reward available today

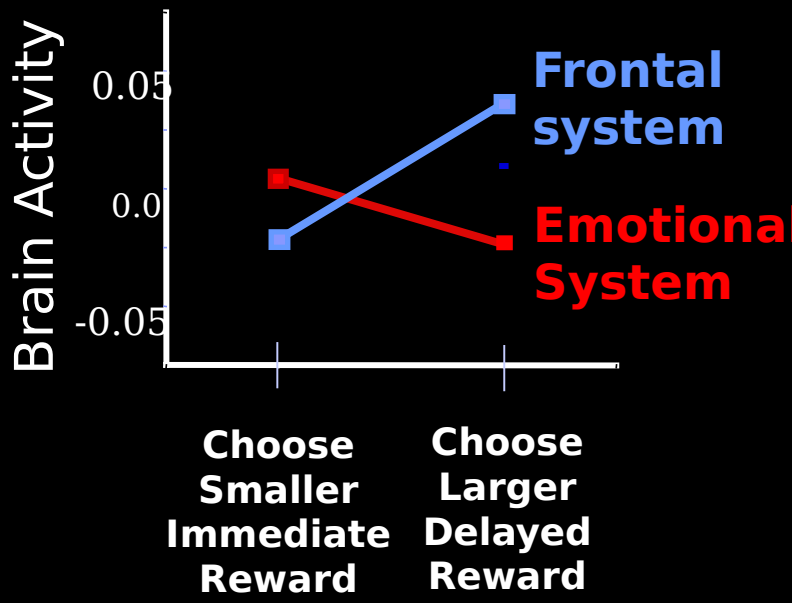
d = Earliest reward available in 2 wee

d = Earliest reward available in 1 mon

Brain Activity in the Frontal System and Emotional System Predict Behavior

(Data for choices with an immediate option.)





Conclusions of fMRI study

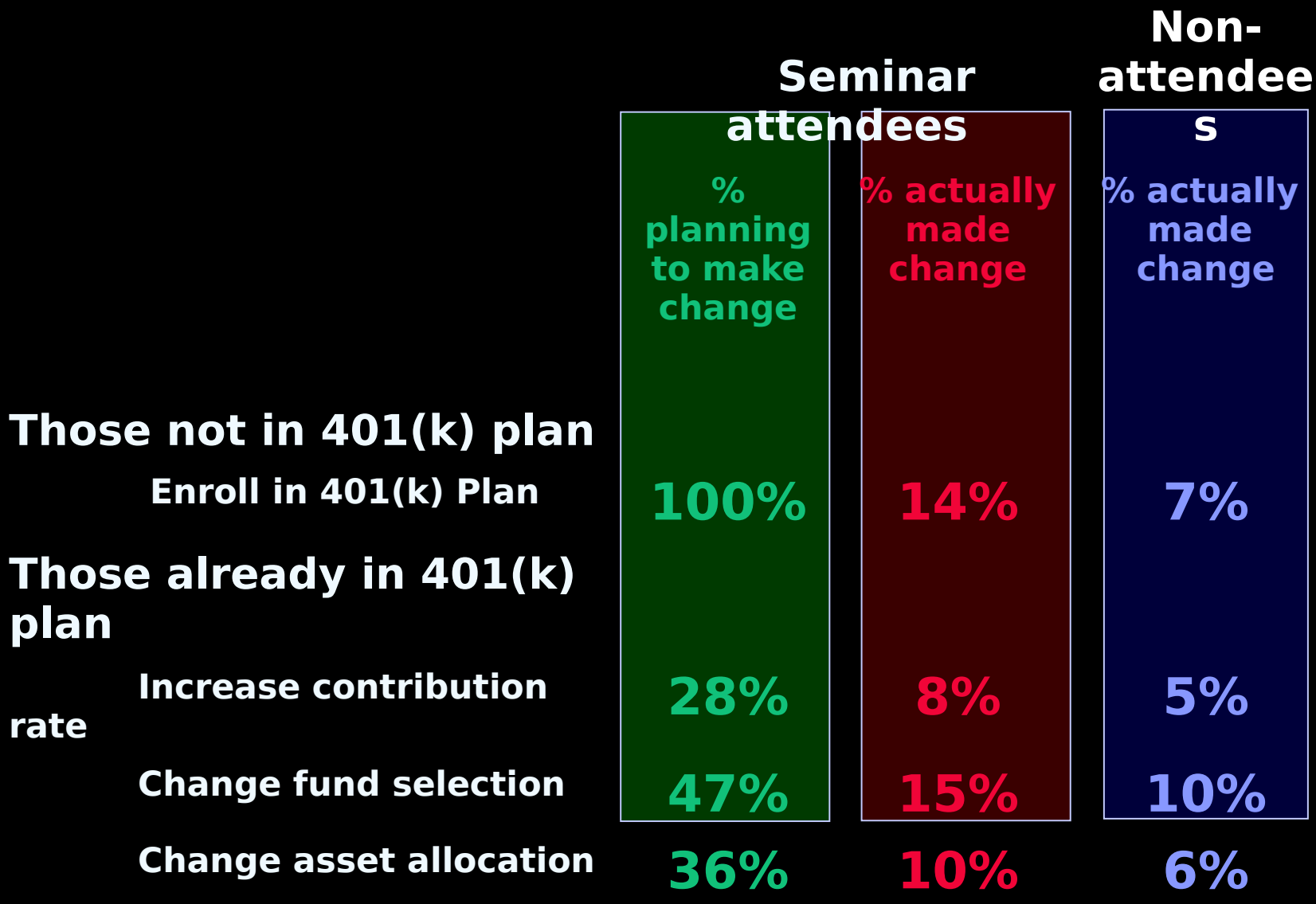
- **Time discounting results from the combined influence of two neural systems:**
  - **Emotional limbic system is impatient**
  - **Analytic fronto-parietal system is patient.**
- **Emotional brain, responds little to delayed rewards**
- **Emotional brain engenders taste for instant gratification**

Financial education:

Choi, Laibson, Madrian, Metrick (2004)

- Seminars presented by professional financial advisors
- Curriculum: Setting savings goals, asset allocation, managing credit and debt, insurance against financial risks
- Seminars offered throughout 2000
- Linked data on individual employees' seminar attendance to administrative data on actual savings behavior before and after seminar

Effect of education is positive but small



Summary

- **Present bias: current rewards get full weight while future rewards get half weight.**
- **Self-defeating behaviors and retirement savings**

Practical solutions that overcome passivity or exploit it.

1. **Ask people to make an active choice**
2. **Simplify enrollment**
3. **Use automaticity**